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ist to apply the results of the general method to practical cases. Lihartzik in Vienna measured twenty children regularly from the day of their birth to their eighth year, and two hundred boys from their eighth until their fourteenth year. The first to make an investigation of this kind with special reference to school work was Dr. Wretling, who measured the increases of children during vacations and during the term. In Denmark Dr. Vahl made semi-annual weighings of the girls at Jägerspris. He arrived at the conclusion that weighings of this kind are the only means of controlling satisfactorily the sanitary conditions of school children. The studies of R. Malling-Hansen indicate that the development depends upon climatic conditions, in so far as the winter seems to cause a retarding influence. If this is true, schools in northern countries ought to have longer summer vacations than schools in southern countries, in order to make up for the lesser growth during the cold season. An important investigation of this character has also been made in Germany by Dr. Landsberger, in Posen, who followed the growth of one hundred and four children through a period of five years.

Most of these investigations deal with the growth of the whole body; they refer only incidentally to the growth of certain parts of the body. Valuable material on this point is, however, contained in Dr. Landsberger's investigation. He found, for instance, that during school age the diameters of the head change only very slightly, while the growth of the body as a whole is very rapid. The next step to be taken in researches of this kind will be the study of the growth of individual parts of the body in connection with their functions. The growth of the hand, together with its increase in strength, ought, for instance, to be studied. The remarkable changes in the curvature of the skull, the relative development of face and head, in short, the development of each part of the body, ought to be made the subject of most searching and careful inquiry. The results to be obtained from investigations of this kind will undoubtedly teach us how to develop the faculties of children each at its proper time.

#### ISOLATION OF A CHOLERA TOXINE.

HERMANN SCHOLL (*Berlin. klin. Woch.*, Oct. 13, 1890) communicates an interesting paper giving the results of some experiments with a poisonous body isolated from cultivations of the cholera bacillus. According to the *British Medical Journal*, he thinks it curious that in all previous investigations on the nature of the cholera, toxine cultivations should have been used which had been grown in the presence of air; whereas, in his opinion, in order to imitate the conditions under which the cholera bacillus grows in the human intestine, the most essential point is that the culture be grown in the absence of air. In this assumption he follows Hueppe and Cartwright Wood, who, he considers, have satisfactorily shown that the cholera bacilli grow in the small intestine in the absence of oxygen, and that their extreme virulence or rapidity of poison production depends chiefly on this anaerobic growth. Other observers, among whom Petri may be cited, think that this point requires more rigorous proof than has yet been afforded.

To obtain this anaerobic growth, the author used the method introduced by Hueppe of growing the bacilli in raw eggs, by which means he holds that oxygen is completely excluded. The inoculated eggs were kept for eighteen days at a temperature of 36° C. When opened the contents were found to give off a very powerful smell of sulphuretted hydrogen, differing in this from cultures grown in air. He describes the white of the egg at this period as being fluid and watery, the yolk firmer in consistence and black in color. In order to test the toxicity of the egg contents, five cubic centimetres of the fluid part were injected into

the peritoneal cavity of a guinea-pig. The animal at first showed signs of paralysis, then convulsive movements, and died at the end of forty minutes. This proved that the fluid egg albumen was very poisonous.

The author then proceeds to describe his method of isolating the poison. Briefly, it is as follows. The fluid part of the egg contents, which amounted to 150 cubic centimetres, was dropped into ten times its volume of absolute alcohol. The white precipitate thrown down was collected and digested with 200 cubic centimetres of water at 40° C. The effect of this was to dissolve only a very small quantity of the precipitate, which was then removed by filtration. Eight cubic centimetres of the transparent filtrate were then injected into the peritoneal cavity of a guinea pig, and caused death in one minute and a half. This fluid entirely lost its poisonous properties on being boiled in the steam sterilizer for half an hour, while a short heating to 75° C. had no such effect. On the other hand, when placed at 40° C. *in vacuo*, over chloride of lime, the fluid was found next day to be completely inert.

The author then subjected the poison to the usual chemical tests, and came to the conclusion that it was no ptomaine, but a peptone, differing, however, from the toxo-peptone isolated by Petri from aerobically grown cultivations. This peptone could be obtained in a solid form by dropping the watery solution into eight to ten times its volume of a mixture of the ether and alcohol, rendered faintly acid by acetic acid. The resulting precipitate was found to be insoluble in pure water, but soluble on the addition of an alkali. After repeating this precipitation and resolution several times, pure ether was substituted for the mixture of ether and alcohol, and the peptone obtained after evaporation as a white bulky substance. A very small quantity of this dissolved in water was then injected into the peritoneal cavity of a guinea-pig. The animal at once became totally paralyzed. After half an hour convulsive movements of the head and extremities set in, and at the end of five hours the guinea-pig died. The author concludes, as the result of his experiments, (1) that the poisonous peptone, elaborated by the cholera bacilli under conditions of anaerobiosis from the albumen of the egg, is different from the toxo-peptone of Petri, since the latter was not decomposed on boiling, while the former was; (2) that this cholera pepto-toxine is much more poisonous than the toxines found by Brieger and Petri in cultures grown under aerobic conditions, since the poison obtainable from a single egg was capable of killing ten guinea-pigs in the space of ten minutes; (3) that these experiments are in favor of the contention of Hueppe and Wood that the cholera bacilli, when grown anaerobically, form a greater quantity of, and a more powerful, poison than when grown aerobically.

#### NOTES AND NEWS.

THE *Pedagogical Seminary* says that in Darmstadt and other large German cities pot-plants are given to school children who live in tenements. They are usually three in number and of the same size, with printed directions how to care for them. At the end of a year are exhibitions and prizes.

— At a meeting of the Royal Society, London, on June 4, the following gentlemen were duly elected fellows of the society: William Anderson, Professor Frederick Orpen Bower, Sir John Conroy, Professor Daniel John Cunningham, Dr. George M. Dawson, Edwin Bailey Elliott, Professor Percy Faraday Frankland, Percy C. Gilchrist, Dr. William Dobinson Halliburton, Oliver Heaviside, John Edward Marr, Ludwig Mond, William Napier Shaw, Professor Silvanus P. Thompson, and Captain Thomas Henry Tizard.

— According to the *Engineering and Mining Journal*, Professor Salisbury of the United States Geological Survey has made arrangements with Professor Smock, in charge of the Geological Survey of New Jersey, to undertake geological studies of the formation of the surface in sections of New Jersey, with especial reference to the glacial drift. He will begin work next month, and his study will be confined to Middlesex, Union, and Essex Counties during the summer. Monmouth and Mercer Counties may also be visited.

— A press dispatch from San Francisco says that the Czar of Russia has presented the Stanford University with a complete collection of Russian and Siberian minerals taken from the St. Petersburg Museum. The collection is valued at about \$35,000, and comprises some eight hundred specimens. Mrs. Stanford will, in return, it is stated, send the Czar a collection of California minerals and precious stones.

— The object of the Society of American Friends of Russian Freedom, recently organized by well-known Americans, is to aid by all moral and legal means the Russian patriots in their efforts to obtain for their country political freedom and self-government. Those who wish to join this society and receive also *Free Russia* (published monthly), should send their names and post-office addresses, with the membership fee of one dollar, to Francis J. Garrison, treasurer, 4 Park Street, Boston, Mass.

— A meeting of the Baltimore Branch of the Archæological Institute of America was held on April 26. Major J. W. Powell of the United States Geological Survey spoke of the Zuñi Indians. Officers were elected as follows: president, Daniel C. Gilman; vice-presidents, Mendes Cohen, Basil L. Gildersleeve, William W. Spence, and Arthur L. Frothingham, Jun.; treasurer, Henry F. Thompson; secretary, J. Le Roy White; delegates to the council, David L. Bartlett and Arthur L. Frothingham, Jun.

— According to the *Pedagogical Seminary*, in Russia, Servia, Roumania, and Bulgaria over 80 per cent of the population are illiterate, Spain 63 per cent, Italy 48 per cent, Hungary 43 per cent, Austria 39 per cent, Ireland 21 per cent, France and Belgium 15 per cent, Holland 10 per cent, United States (whites) 8 per cent, Scotland 7 per cent, Switzerland 2.5 per cent, some parts of Germany 1 per cent. In Sweden, Denmark, Bavaria, Wurtemberg, and Saxony only rarely a person cannot write.

— Esquirol called attention to the fact that idiots without the power of speech could sing. Dr. Wildermuth of Stettin compared 180 idiotic children with 80 normal children in regard to vocal range, sense of harmony, and memory for melody; and 27 per cent of the idiots and 60 per cent of the normal children were classed as musical in the highest degree, 11 per cent of the idiots and 2 per cent of the normal children were without musical ability. This remarkable relative development of the musical sense in idiots, says the *Pedagogical Seminary*, is the more striking as there is no evidence of any other artistic taste. The practical outcome of Wildermuth's observations is to emphasize the necessity of vocal culture in the training of idiots.

— The Society of Arts, London, offers a gold medal or £20 for the best invention having for its object the prevention or extinction of fires in theatres or other places of public amusement. In cases where the invention is in actual use, reference should be made to places where it could be inspected. A full description of the invention, accompanied by such drawings or models as are necessary for its elucidation, must be sent in on or before Dec. 31, 1891, to the secretary of the Society of Arts, John Street, Adelphi, London.

— Those interested in questions relating to physical education will find much to please them in a paper, in the June number of *Physique*, by the Rev. T. A. Preston. Many boys are not much attracted by games, and it seems hard that in such cases any sort of compulsion should be used. Why not have various alternative ways of securing exercise, any one of which might be chosen? Mr. Preston shows with great force, says *Nature*, and in a very interesting manner, with how much advantage the study of natural history might in some instances be substituted for cricket and football. Boys out for a field excursion take a great deal more exercise, he maintains, than is ever taken at cricket. "With those who are keen naturalists," he says, "the mere exercise taken in any one day (not in an excursion) is often such that it might almost be said to require moderating. I have no hesitation in saying that, if exercise alone is to be considered, a field naturalist will take far more than any one at games."

— A series of experiments with regard to evaporation from free water surfaces and from earth saturated with water, in sun and in shade, has been recently made by Signor Battelli. *Nature*

states (quoting from *Il Nuovo Cimento*) that he used three large tubs or vats, two holding water, and the third earth on a grating, to which water was admitted from a pipe entering the bottom. One water-tub and the earth-tub stood a few yards apart on the north side of a high wall; the other water-tub was in the open, and embedded in the ground. Signor Battelli's results are these: The quantity of water evaporated from moist earth is in general greater than that from a free stagnant water surface, when the air temperature rises; but less, when the latter falls. With increasing wind-velocity, evaporation increases more rapidly from the water surface. The moister the air, the greater (other things equal) seems to be the ratio of the water evaporated from the moist earth to that from the stagnant water surface. The evaporation of a water surface exposed to the sun's rays is greater than that of a shaded one, not only by day, but in the following night. With rising temperature, the ratio between the water quantities from these two surfaces increases somewhat more quickly; with rising wind-velocity, this ratio diminishes.

— Dr. S. V. Clevenger, in the *Alienist and Neurologist* for July, 1890, describes an infant prodigy, Oscar Moore. Two little colored children were reciting the multiplication table at their home, in a little cabin in Texas, as they had repeatedly done before, and one of them asserted that four times twelve was fifty eight, whereupon a thirteen months old baby, Oscar Moore, who had never spoken before, corrected the error by exclaiming, "Four times twelve are forty-eight!" There was consternation in that humble home until the family became reconciled to the freak. Oscar was born in Waco, Texas, in 1885; his father is an emancipated slave, his mother is a mulatto. He was born blind; the other senses are unusually acute; his memory is the most remarkable peculiarity. He is intelligent and manifests great inquisitiveness: his memory is not parrot-like. When less than two years of age he would recite all he heard his sister read while conning her lessons. He sings and counts in different languages, has mastered an appalling array of statistics, and is greatly attracted by music. The writer concludes that Oscar is not mentally defective, but may possess extraordinary mental powers.

— A direct observation of hail in the process of formation is recorded in the *Naturwissenschaftliche Rundschau* and noted in a recent number of *Nature*. In the afternoon of a squally day Professor Tosetti, looking eastwards through the window of a house (in northern Italy) which, with two others, inclosed a court, saw the rain which streamed down from the roof to the right, caught by a very cold wind from the north, and driven back and up in thick drops. Suddenly a south wind blew, and the drops, tossed about in all directions, were transformed into ice balls. When the south wind ceased, this transformation also ceased, but whenever the south wind recurred, the phenomenon was reproduced, and this was observed three or four times in ten minutes.

— So much has been said and written upon the smoke-abatement question in England that the idea of utilizing this dire enemy of public health and cleanliness so as to actually make its existence a source of profit is somewhat attractive. In a lecture recently delivered by Professor V. B. Lewes, reference was made to certain facts in this connection, of high interest. As given in *Invention*, one of these facts was that at three or four Scotch iron-works the Furnace Gas Company are paying a yearly rental for the right of collecting the smoke and gases from the blast-furnaces. These are passed through several miles of wrought-iron tubing, diminishing in size from six feet down to eighteen inches, and as the gases cool there is deposited a considerable yield of oil. At Messrs. Dixons' at Glasgow, which is the smallest of these installations, they pump and collect about 60,000,000 cubic feet of furnace-gas per day, and recover on an average 25,000 gallons of furnace oil per week, using the residual gases, consisting chiefly of carbon monoxide, as fuel for distilling and other purposes, while a considerable yield of sulphate of ammonia is also obtained. In the same way a small percentage of the coke-ovens are fitted with condensing gear, and produce a considerable yield of oil, for which, however, in its crude state, there is but a limited market, the chief use being for lucigen and other lamps of the same description, and for treating timber for railway sleepers. In view of such arrange-

ments Professor Lewes is not unnaturally sanguine that the smokefiend may eventually be dealt with in a way quite as satisfactory, but far more profitable than mere self-consumption. The oil above described can, for instance, be greatly improved in quality by ridding it of the large percentage of watery particles it contains when freshly condensed. Mr. Havelly of Baghill, England, has devised a process whereby not only the water, but the paraffine, cresol, and phenol, are removed from the crude oil, leaving the residuum in better condition, and of high value for timber. This oil, Professor Lewes asserts, can be used as an enricher of gas, enabling gas of a higher illuminating power to be produced at a reduced cost. If this be true it will not be the least remarkable instance of waste-products of a process becoming even more valuable than the original article manufactured.

— A correspondent of *Indian Engineering* says he recently witnessed a very interesting mode of obtaining a foundation for a new building. A hole was bored in the ground (which was previously damp), from ten to twelve feet deep and an inch and a half wide, and a string of cartridges was lowered into it. The subsequent explosion not only produced a cavity a yard in diameter, but also drove the water out of the surrounding earth by means of the expansive action of the gases. The water did not return to its former place for fully an hour, so that an opportunity was afforded to fill up the cavity with quickly settling concrete, and a rapid rate of working was thus attained.

— In his recent lecture on fire prevention Professor Goodman states, says the *Builder*, that, generally speaking, wooden joists are better for buildings than steel or iron joists. The two latter materials, he explained, lose their strength at a not very high temperature, whereas wood would sustain a heavy strain for a much longer period when exposed to great heat. Besides, when wood has once been charred, it does not burn so readily again. Iron and steel soon expand under the influence of heat. Brick and stone are objectionable: the former become fused under great heat, and the latter is liable to crack or fly when suddenly cooled after heating. The drawback to tiles is, that, when fire plays upon the joists of floors fitted with them, the joists expand and allow the fire to play upon the joists through the tiles. Portland cement is objectionable, as it flakes off when heated, but if wire netting or bars are embedded in concrete this defect is remedied. A joist padded with silicate of cotton and incased in salamander plaster (a mixture of silicate, cotton, and plaster-of-Paris), the professor holds, is a splendid fireproofing material. Such a material is not only a non-conductor, but it is elastic, and would yield with the joist. In an experiment undertaken by Professor Goodman it was found that a joist of this kind withstood very fierce heat for eight to nine hours without sustaining any serious damage.

— Dr. J. Hann has communicated another important treatise to the Vienna Academy, entitled "Studies on the Conditions of Air-Pressure and Temperature on the Summit of the Sonnblick," with remarks upon their importance for the theory of cyclones and anticyclones. The work is based upon four years' observations, and is divided into eight sections, which are given in *Nature* of June 4 as follows. (1) An investigation of the general meteorological conditions under which the maxima and minima of air-pressure occur on the Sonnblick. The anomalies of pressure are more marked above than below, and are increased by the accompanying temperature anomaly, which is relatively high in barometric maxima, and relatively low in barometric minima. (2) The range of temperature during the passage of a barometric wave. This is, at least during the winter season, the opposite to that at the lower level. (3) Temperature with varying amount of cloud in winter. The highest temperature coincides with the least cloud, upon the summit, and conversely on the plain. The clear winter days on the Sonnblick have relatively high temperature with great dryness, and these conditions are characteristic of the barometric maxima. (4) Monthly maxima and minima of temperature. The former mostly occur during barometric maxima, and the latter when the high pressure lies in the west or north, and while a barometric minimum exists over Italy or the Adriatic. (5) Temperature and air-pressure on the Sonnblick during barometric minima over cen-

tral Europe, especially over the eastern Alps. The mean temperature at the height of 6,650 feet during the passage of barometric minima was below the normal, amounting on an average to 2.5° F. during the winter season. The use of deviations of pressure and temperature in answering many questions of atmospheric physics is here discussed. (6) Vertical distribution of temperature, and mean temperature in a column of air of three kilometres in height. The calculations have been made separately for each winter. (7) Preliminary indications respecting the relations of the wind-directions to barometric maxima and minima. A considerable divergence (45° to 90°) is shown from the directions as observed below, and the results confirm the conclusions drawn from cloud observations by J. A. Broun and others. (8) Refutation of some objections against the conclusiveness of temperature observations on mountain summits, and general remarks on cyclones and anticyclones. The author points out that recent mountain temperature observations and other facts are opposed to the explanation of barometric maxima and minima in extra-tropical regions by purely thermic considerations.

— According to *Engineering*, Messrs. David Moseley & Sons, of Manchester, are introducing a form of battery zinc in which the element is built up of a number of tubes constructed of thin sheets, which can be obtained in great purity. These tubes are slipped inside each other to form the element. Each tube is amalgamated before the element is put together, and the mercury permeates the whole wall of the tube, as the latter is only one-thirty-second of an inch thick, and the zinc is very pure. The amalgamation is accordingly very perfect, and local action is entirely got rid of. The manufacturers state that when these elements are used, no time has to be spent in cleaning and scraping the zincs, which remain free from chloride of zinc and crystals till completely expended.

— Considering the question of determination of the evaporating power of a climate, Dr. Ule distinguishes (*Met. Zeits.*) between the intensity and the speed of evaporation. The latter, says *Nature*, can be well determined with an instrument like Wild's evaporimeter; and Dr. Ule sets forth, in a table, the monthly data of this for Chemnitz, compared with those of absolute humidity, "saturation deficit," and relative humidity. The agreement of the last with the evaporimeter figures is much better than that of the two others; still, there is considerable discrepancy, and this is not explained (the author shows) by variations in wind-intensity. On the other hand, the data of the psychrometer show a remarkable parallelism with those of the evaporimeter, and by taking wind-variations into account the agreement is increased. Thus, from psychrometer-differences and wind-variations, the evaporative power of a climate may be correctly estimated where an evaporimeter is wanting. Dr. Ule offers a new formula for estimating the layer of water evaporated in a given time, and tests it with two German climates and one Australian.

— The government of the Dutch East India colonies has instituted a prize competition open to the world. The Dutch government is a large producer of salt on the island of Madura, and it is anxious to find a practical way of packing the salt, as it is retailed for government account. To the contestant who offers the best and most economical method the Dutch government offers to pay \$4,000. The government salt comes from the numerous open salt ponds in the island named. After the product from these ponds has been partly dried by solar heat it is brought to the government store-houses, where it remains for a year or longer. The product is light gray, of irregular crystals, and likely, if exposed to climatic influences, to absorb moisture and melt. For this reason the Dutch colonial government wants the salt packed in such a way that the weather cannot affect it, a desideratum which it has yet failed to obtain. The material used in packing must be proof against the action of the salt and at the same time must not injure the salt in any way. It must also be strong enough to preserve the salt for at least two years, and after the cans or boxes are closed the salt must not melt. The cans or boxes must hold just a kilogram of salt each, to be packed in larger cases for transportation. It is estimated that for the total yearly production 74,150,000 cans or boxes of one kilogram each will be needed. The packing

operation will, if required, have to be preceded by an artificial drying process, as it has been found that salt carefully dried is more easily preserved. A detailed statement of costs must be filed, and for wages the average paid in the Netherlands must be figured upon. A special contest will take place at Amsterdam between the competitors. For this the contestants must supply the necessary materials and machinery. The government will buy from the contestant receiving the premium the machinery used by him at the contest. Answers must be filed with the Department of the Colonies at the Hague before Sept. 1.

— A butter extractor (or extractor separator), a new machine for making butter directly from fresh milk, is now being run regularly at the Pennsylvania Agricultural Experiment Station, on Mondays, Wednesdays, and Saturdays of each week. Any persons desiring to see the operation of the machine will be welcomed and given every facility for investigating its workings. Visitors from a distance should purchase railroad tickets to Lemont. A stage connects with all trains.

— Medical studies of the school children in Berlin showed that 25 per cent had more or less defective hearing, most of them being thought deaf enough to be incommode in their work. The *Pedagogical Seminary* remarks that such partially deaf children are often thought unjustly by their teacher to be inattentive. More effort of attention is needed by such children, who are usually utterly incredulous concerning their defect, although they often complain that the teacher speaks too low or indistinctly. Children from better homes are less often defective than those from squalid ones.

— Beginning on Wednesday, July 1, and continuing six weeks, there will be held at Plymouth, Mass., a school for the discussion of practical ethics in the broadest sense of that phrase. The matter to be presented has been selected with regard to the wants of clergymen, teachers, journalists, philanthropists, and others, who are now seeking careful information upon the great themes of ethical sociology. The course of lectures will cover three different departments: economics, history of religions, and ethics proper. The department of economics will be in charge of Professor H. C. Adams of the University of Michigan. Professor Adams will deliver seventeen lectures, three during each of the six weeks, on the history of industrial society and economic doctrine in England and America, beginning with the middle ages, and tracing genetically the gradual rise of those conditions in the labor world which cause so much anxiety and discussion to-day. His associates and the topics which they will treat are as follows: Professor John B. Clark of Smith College, "Modern Agrarianism;" Albert Shaw, American editor of the *Review of Reviews*, "Social Questions suggested by the Crowding of Cities;" Professor Edmund J. James, president of the American Society for the Extension of University Teaching, "Education in its Social and Economic Aspects;" Henry D. Lloyd of Chicago, "Trusts;" Professor Frank W. Taussig of Harvard University, "Co-Operation;" Hon. Carroll D. Wright, United States Commissioner of Labor, "Factory Legislation;" President E. Benj. Andrews of Brown University, "Socialism." The department of the history of religions will be in charge of Professor Crawford H. Toy of Harvard University. Professor Toy will offer a general course of eighteen lectures, extending through the six weeks, treating the history, aims, and method of the science of history of religions, and illustrating its principles by studies in the laws of religious progress, with examples drawn from the chief ancient religions. His associates and their topics are Professor M. Bloomfield of Johns Hopkins University, "Buddhism;" Professor George F. Moore of Andover Theological Seminary, "Islam;" Professor Morris Jastrow, Jun., of the University of Pennsylvania, "The Babylonian-Assyrian Religion;" Professor G. L. Kittredge of Harvard University, "The Scandinavian Religion;" Professor B. I. Wheeler of Cornell University, "The Greek Religion;" Mr. W. W. Newell, editor of the *Journal of American Folk-Lore*, "The Religion of the Laity in the Middle Ages." The department of ethics will be in charge of Professor Felix Adler of New York City. Professor Adler will offer a general course of eighteen lectures, extending through the six weeks, on the system of applied ethics, with special reference to the

moral instruction of children, including a brief survey of the various schemes of classification adopted in ancient and modern ethical systems, the discussion of the relation of religious to moral instruction, of the development of the conscience in the child, etc. His associates and their topics are Dr. Charlton T. Lewis of New York, "Criminals and the State;" Professor J. B. Thayer of Harvard Law School, and Hon. Herbert Welsh of Philadelphia, "The Indian Question;" Mr. J. H. Finley, secretary of the State Charities Aid Association of New York, "The Problem of Charity in Great Cities;" Rev. C. R. Eliot of Boston, "Temperance Reform and Legislation;" Emil G. Hirsch of Chicago, "The Ethical Ideal in Education;" Professor Wm. E. Sheldon of Boston, "Humane Treatment of Animals;" Mrs. Caroline Earle White, president of the Woman's Branch of the Pennsylvania Society for the Prevention of Cruelty to Animals, "Vivisection;" Mr. W. L. Sheldon of St. Louis, "Reform Movements among Workingmen;" Mr. Wm. M. Salter of Chicago, "Ethical Theory;" Professor Robert Ellis Thompson of the University of Pennsylvania, "Politics and Ethics."

— In the course of an investigation, part of which has already been communicated to the Royal Society, Professor Roberts-Austen has discovered the most brilliantly colored alloy as yet known. *Nature* states that it has a rich purple color, and bright ruby tints are obtained when light is reflected from one surface of the alloy to another. It contains about 78 per cent of gold, the rest of the alloy being aluminum. The constants of the aluminum-gold series of alloys are now being examined, and will shortly be published.

— According to *Nature*, the relations of weather and disease have been recently investigated by Herr Magelssen of Leipzig, who, having formerly called attention to the nature of certain "waves" which recur in the variations of temperature (distinguishing waves of about 12 days, 50 days, and 18 to 20 years duration), now traces a connection of these with diseases and mortality. The year-waves especially, show this connection, the mortality (in our latitudes) varying with the winter temperature. The least mortality (relatively) is at the middle part of the temperature periods. The injurious influence of heat is dominant in the more southern latitudes (such as Vienna), while cold begins to act beneficially. In northern places, mild winters prove injurious where several very mild winters come in succession (e.g., Stockholm in 1871-74). The most favorable conditions seem to be an alternation of moderately cold and moderately mild winters. Too much importance, the author thinks, has been attached to relative humidity. He further offers proof that infectious disease is even more dependent on weather than disease of the respiratory organs, or arising from chill.

— The value of systematic observation of snow is now being recognized in meteorology, says *Nature*, and in Russia observations were commenced in January last year at 428 stations in the European portion of the empire, 21 in the Asiatic, and 55 in the Caucasus. At first it was simply reported daily whether there was a continuous snow-covering about the station or not. But last winter the inquiry had been extended to the depth and general behavior of the snow. Thus it is expected that in a few years some valuable climatological material will have been accumulated at St. Petersburg. The report of Herr Berg on the snow in the early months of 1890, in European Russia (*Repert. für Meteor.*), contains a map showing the southern and western limit of the continuous snow-covering for the first and fifteenth of each of the months from January to April. In the west the snow extended steadily till the beginning of March, the limit being then close to the Baltic. In the south-east, there was steady advance till February, and as far as the coast of the Caspian. In the south, the advance was fluctuating, there being a maximum in the middle of January and in the middle of February, both reaching to the Black Sea coast. The retirement of the snow-limit began in the south and south-east in the middle of February; in the west about half a month later. The general direction was north-east. On April 15 the limit passed through Onega on the White Sea, Wetluga, and Katherinenburg. By the first of May all European Russia was free from snow. Herr Berg describes the weather accompanying the disappearance of the snow, and traces its causation.